

IN THE CLAIMS:

This Listing of Claims replaces all prior Listings and versions of claims in the above-identified application.

Listing of Claims:

1. (Previously Presented) An isolated DNA molecule comprising a DNA sequence encoding a dicamba-degrading oxygenase from a dicamba-degrading bacterium, wherein said dicamba-degrading oxygenase has a subunit molecular mass of about 40kD, comprises an iron-sulfur cluster, and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

2. (Currently Amended) An isolated DNA molecule comprising a DNA sequence encoding a dicamba-degrading oxygenase, wherein said dicamba-degrading oxygenase is selected from the group consisting of:

a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4;

b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA); and

c) a dicamba-degrading oxygenase having an amino acid sequence which is at least about 65% identical to the amino acid sequence of SEQ ID NO:4, which comprises an iron-sulfur cluster and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

3. (Currently Amended) ~~The DNA molecule of Claim 2 comprising the~~ An isolated DNA molecule comprising a nucleotide sequence of SEQ ID NO:3.

4. (Previously Presented) A DNA construct comprising a DNA sequence encoding a dicamba-degrading oxygenase from a bacterium that degrades dicamba operatively linked to expression control sequences, wherein said dicamba-degrading oxygenase has a subunit molecular mass of about 40kD, comprises an iron-sulfur cluster, and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

5. (Currently Amended) A DNA construct comprising a DNA sequence encoding a dicamba-degrading oxygenase operatively linked to expression control sequences, wherein said dicamba-degrading oxygenase is selected from the group consisting of:

- a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4;
- b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA); and
- c) a dicamba-degrading oxygenase having an amino acid sequence which is at least about 65% identical to the amino acid sequence of SEQ ID NO:4, which comprises an iron-sulfur cluster, and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

6. (Currently Amended) ~~The DNA construct of Claim 5 comprising the~~ A DNA construct comprising a nucleotide sequence of SEQ ID NO:3 operatively linked to expression control sequences.

7. (Previously Presented) The DNA construct of Claim 5 which is a vector.

8-20. (Cancelled)

21. (Currently Amended) A transgenic host cell comprising DNA encoding a dicamba-degrading oxygenase, said DNA being operatively linked to expression control sequences;

wherein said dicamba-degrading oxygenase is selected from the group consisting of:

- a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4;
- b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA); and
- c) a dicamba-degrading oxygenase having an amino acid sequence which is at least about 65% identical to the amino acid sequence of SEQ ID NO:4, which comprises an iron-sulfur cluster, and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

22. (Currently Amended) ~~The transgenic host cell of Claim 21 wherein the DNA~~  
A transgenic host cell comprising DNA encoding encodes a dicamba-degrading oxygenase  
having the amino acid sequence of SEQ ID NO:4, said DNA being operatively linked to  
expression control sequences.

23. (Original) The transgenic host cell of Claim 22 wherein the DNA comprises  
the nucleotide sequence of SEQ ID NO:3.

24. (Currently Amended) The transgenic host cell of any one of Claims ~~Claim 21,~~  
22 or 58 which is a plant cell.

25-35. (Cancelled)

36. (Currently Amended) A transgenic plant or part of a said transgenic plant  
comprising one or more cells comprising DNA encoding a dicamba-degrading oxygenase,  
said DNA being operatively linked to expression control sequences;

wherein said dicamba-degrading oxygenase is selected from the group consisting of:

a) a dicamba-degrading oxygenase having the amino acid sequence of  
SEQ ID NO:4;

b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and  
catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA); and

c) a dicamba-degrading oxygenase having an amino acid sequence which  
is at least about 65% identical to the amino acid sequence of SEQ ID NO:4, which  
comprises an iron-sulfur cluster, and which catalyzes the oxidation of dicamba to 3,6-  
dichlorsalicylic acid (DCSA).

37. (Currently Amended) ~~The transgenic plant or plant part of Claim 36 wherein~~  
~~the DNA encodes~~ A transgenic plant or part of a said transgenic plant comprising one or  
more cells comprising DNA encoding a dicamba-degrading oxygenase having the amino acid  
sequence of SEQ ID NO:4.

38. (Previously Presented) The transgenic plant or plant part of Claim 37 wherein  
the DNA comprises the nucleotide sequence of SEQ ID NO:3.

39. (Previously Presented) The transgenic plant or plant part of Claim 36 wherein  
the plant is a broadleaf plant which is tolerant to dicamba as a result of the expression of the

dicamba-degrading oxygenase and the plant part is a part of a broadleaf plant which is tolerant to dicamba as a result of the expression of the dicamba-degrading oxygenase.

40-43. (Cancelled)

44. (Currently Amended) A method of controlling weeds in a field containing a transgenic plant according to any one of Claims ~~36-39, 61-62 or 64-65~~ 36, 37, 62 or 63, comprising applying an amount of dicamba to the field effective to control the weeds in the field.

45-46. (Cancelled)

47. (Currently amended) A method of selecting transformed plant cells comprising:

providing a population of plant cells;

transforming at least some of the plant cells in the population of plant cells with the DNA construct according to any one of Claims ~~4-7, 54-56 or 66~~ 4, 5, 6, 56 or 57; and

selecting the transformed plant cells by culturing the resulting population of plant cells in a culture medium containing dicamba at a concentration selected so that transformed plant cells proliferate and untransformed plant cells do not proliferate.

48. (Currently Amended) A method of selecting transformed plants comprising:

providing a population of plants which comprises one or more plants comprising the DNA construct according to any one of Claims ~~4-7, 54-56 or 66~~ 4, 5, 6, 56 or 57; and

selecting transformed plants by applying an amount of dicamba to the population of plants selected so that transformed plants grow, and growth of untransformed plants is inhibited.

49. (Cancelled)

50. (Previously Presented) The DNA molecule of Claim 1 comprising a DNA sequence encoding a *Pseudomonas* dicamba-degrading oxygenase.

51. (Previously Presented) The DNA molecule of Claim 1 comprising a DNA sequence encoding a *Pseudomonas maltophilia* dicamba-degrading oxygenase.

52. (Currently Amended) ~~The DNA molecule of Claim 2~~ An isolated DNA molecule comprising a DNA sequence encoding a dicamba-degrading oxygenase which is

at least about 85% identical to the amino acid sequence of SEQ ID NO:4 and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

53. (Currently Amended) ~~The DNA molecule of Claim 2~~ An isolated DNA molecule comprising a DNA sequence encoding a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4.

54. (Previously Presented) The DNA construct of Claim 4 comprising a DNA sequence encoding a *Pseudomonas* dicamba-degrading oxygenase.

55. (Previously Presented) The DNA construct of Claim 4 comprising a DNA sequence encoding a *Pseudomonas maltophilia* dicamba-degrading oxygenase.

56. (Currently Amended) ~~The DNA construct of Claim 5~~ A DNA construct comprising a DNA sequence encoding a dicamba-degrading oxygenase which is at least about 85% identical to the amino acid sequence of SEQ ID NO:4 and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

57. (Currently Amended) ~~The DNA construct of Claim 5~~ A DNA construct comprising a DNA sequence encoding a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4.

58. (Currently Amended) ~~The transgenic host cell of Claim 21 wherein the DNA encodes~~ A transgenic host cell comprising DNA encoding a dicamba-degrading oxygenase which is at least about 85% identical to the amino acid sequence of SEQ ID NO:4 and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA), said DNA being operatively linked to expression control sequences.

59. (Previously Presented) A transgenic host cell comprising DNA encoding a dicamba-degrading oxygenase from a bacterium that degrades dicamba, said DNA being operatively linked to expression control sequences, wherein said dicamba-degrading oxygenase has a subunit molecular mass of about 40kD, comprises an iron-sulfur cluster, and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

60. (Previously Presented) The transgenic host cell of Claim 59 wherein the DNA encodes a *Pseudomonas* dicamba-degrading oxygenase.

61. (Previously Presented) The transgenic host cell of Claim 59 wherein the DNA encodes a *Pseudomonas maltophilia* dicamba-degrading oxygenase.

62. (Currently Amended) ~~The transgenic plant or plant part of Claim 36 wherein the DNA encodes~~ A transgenic plant or part of a said transgenic plant comprising one or more cells comprising DNA encoding a dicamba-degrading oxygenase which is at least about 85% identical to the amino acid sequence of SEQ ID NO:4 and which catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA), said DNA being operatively linked to expression control sequences.

63. (Previously Presented) A transgenic plant or part of a said transgenic plant comprising one or more cells comprising DNA encoding a dicamba-degrading oxygenase from a bacterium that degrades dicamba, said DNA being operatively linked to expression control sequences, wherein said dicamba-degrading oxygenase has a subunit molecular mass of about 40kD, comprises an iron-sulfur cluster, and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

64. (Previously Presented) The transgenic plant or plant part of Claim 63 wherein the DNA encodes a *Pseudomonas* dicamba-degrading oxygenase.

65. (Previously Presented) The transgenic plant or plant part of Claim 63 wherein the DNA encodes a *Pseudomonas maltophilia* dicamba-degrading oxygenase.

66. (Previously Presented) The transgenic plant or plant part of Claim 63 wherein the plant is a broadleaf plant which is tolerant to dicamba as a result of the expression of the dicamba-degrading oxygenase and the plant part is a part of a broadleaf plant which is tolerant to dicamba as a result of the expression of the dicamba-degrading oxygenase.

67. (Previously Presented) The DNA construct of Claim 4 which is a vector.

68. (Previously Presented) The isolated DNA molecule of Claim 1, wherein said dicamba-degrading oxygenase has a  $K_m$  for dicamba of about 10 $\mu$ M and has a  $V_{max}$  of approximately 100-110 nmol/min/mg.

69. (Currently Amended) The isolated DNA molecule of Claim 2, wherein said dicamba-degrading oxygenase is selected from the group consisting of:

a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4; and

b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

70. (Currently Amended) The transgenic host cell of Claim 21, wherein said dicamba-degrading oxygenase is selected from the group consisting of:

a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4; and

b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

71. (Currently Amended) The transgenic plant or plant part of Claim 36, wherein said dicamba-degrading oxygenase is selected from the group consisting of:

a) a dicamba-degrading oxygenase having the amino acid sequence of SEQ ID NO:4; and

b) a fragment of SEQ ID NO:4 that comprises an iron-sulfur cluster and catalyzes the oxidation of dicamba to 3,6-dichlorsalicylic acid (DCSA).

72. (New) The DNA construct of Claim 6 which is a vector.

73. (New) The transgenic plant or plant part of Claim 37 wherein the plant is a broadleaf plant which is tolerant to dicamba as a result of the expression of the dicamba-degrading oxygenase and the plant part is a part of a broadleaf plant which is tolerant to dicamba as a result of the expression of the dicamba-degrading oxygenase.